DOCUMENT RESUME

ED 375 540 EC 303 376

AUTHOR	Hellerman, Susan B., Ed.
TITLE	Exploring Career Options.
INSTITUTION	Johns Hopkins Univ., Baltimore, MD. Center for Talented Youth.
REPORT NO	ISSN-1071-605X
PUB DATE	94
NOTE	19p.; For all volume one issues of this newsletter, see EC 303 371.
AVAILABLE FROM	John Hopkins University Press, 2715 North Charles St., Baltimore, MD 21218-4319 ($30 annually, $5 back issues).
PUB TYPE	Collected Works - Serials (022)
JOURNAL CIT	Imagine...Opportunities and Resources for Academically Talented Youth; v1 n5 May-Jun 1994
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Academically Gifted; *Career Exploration; *Career Planning; College Bound Students; Correspondence Study; *Mentors; Organizations (Groups); Science Projects; Secondary Education
IDENTIFIERS	Brown University RI

ABSTRACT

This newsletter theme issue offers advice to academically talented youth on exploring career options. It begins with an article titled "How To Think about Your Career When You Haven't Even Decided Where To Go to College." The article notes the hazards of early career choice and recognizes the career indecision often brought on by multipotentiality. Names and addresses of 51 organizations that can provide career information are supplied. An article then describes projects of several students participating in the 1994 Westinghouse Science Talent Search. A book review of "The Young Scientists" by Joseph Berger accompanies the article. Another article, "Mentorships and Other Hands-On Strategies for Career Exploration," examines the importance of mentorship, how to find a mentor, and other learning strategies such as shadowing and internships. The educational option of correspondence courses is explored, and several universities offering them are listed. The regular College Review Series describes Brown University (Rhode Island), based on perceptions of nine students enrolled there. The "Creative Minds Imagine" page includes a puzzle and poem. (JDD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

VOLUME I • NUMBER 5

ImaGiNe...

Opportunities and Resources for Academically Talented Youth

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED 375 540

May/June 1994

Next year's features **2**

How to Think about Your Career When You Haven't Even Decided Where to Go to College **3**

The 1994 Westinghouse Science Talent Search **5**

Mentorships and Other Hands-On Strategies for Career Exploration **8**

Sources of Career Information **10**

Correspondence Courses **12**

Expository Writing Tutorial-By-Mail **13**

Students Review Brown University **14**

Creative Minds Imagine... **16**

PERMISSION TO REPRODUCE THIS MATERIAL IN **OTHER THAN PAPER COPY** HAS BEEN GRANTED BY

Arlene W. Sullivan

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

EC 303376

Spotlight On

Exploring Career Options

Professionals and students confer at a CTY Career Day.

Photo by Bob Stockfield

Some students choose career interests and even career goals at a very young age, identifying themselves as tomorrow's physicians or architects long before such a choice is necessary.

Others find it harder to imagine what they will do when they enter the working world. Choosing the ideal college seems manageable, but sifting through options on the other side of student life seems more difficult. To these students, life after school looks murky—exciting, perhaps, but remote and uncertain.

Whether you feel clear or confused about the career choices that await you, some important considerations can help you think effectively about your working world destinations. And once grounded in the issues of career planning, you can start making maps of directions you might take and paths you might forge. ■

BEST COPY AVAILABLE

Dear Readers,

Imagine was developed to help academically talented students find the resources they need to be challenged during their precollege years. Recognizing that the design of an optimal educational program requires consideration of students' unique abilities, needs, and learning styles—as well as available resources in the home, school, and community—*Imagine* seeks to inform students about ways to accelerate, enrich, and/or supplement the basic school curriculum.

This issue marks the end of our first academic year of publishing *Imagine*. We are now preparing articles for the five issues we will publish next year, beginning in September. These focus topics will be featured in 1994-95:

- September/October **Mathematics**
- November/December **Humanities**
- January/February **Academic Summer Programs**
- March/April **Science and Technology**
- May/June **Foreign Language Study and Study Abroad**

Each issue will also include articles on other education-related subjects, such as the learning disabled/gifted student, home schooling, and early college entrance programs. We will continue to include the *College Review Series*, *Mailbag*, *Coach's Corner*, and *Creative Minds Imagine*, as well as information on competitions, college admissions, and other topics that were popular this year.

A Fascinating Classics series will be launched and will feature explorations, by two of our writers, of important literary works. In 1994-95, this series will focus on five narratives of personal quest: *Emma*, by Jane Austen; *Great Expectations*, by Charles Dickens; *The Great Gatsby*, by F. Scott Fitzgerald; *The Woman Warrior*, by Maxine Hong Kingston; and *I Know Why the Caged Bird Sings*, by Maya Angelou. Special attention will be paid to each work's treatment of the relationship between *self and society*. To take full advantage of this new series, read as many of these books as you can over the summer; be sure to read *Emma* by September.

You can help ensure that *Imagine* meets the needs of academically talented students such as yourselves. We welcome your comments about articles we've printed, your suggestions for new topics, and your questions for the *Mailbag*.

Also, send us your articles for publication. Tell us about your experiences in special programs for the gifted (for example, see Kimberly Knowles' article on academic summer programs in the past January/February issue). Share your thoughts with other academically talented students; learn from each other's experiences. And don't forget to submit book and movie reviews, short stories, brain teasers, and other original endeavors for *Creative Minds Imagine*.

If you are a subscriber, be sure your subscription does not lapse. If you are not a subscriber, register **now.** Tell your friends, teachers, guidance counselors, and librarians about *Imagine*. Our introductory offer of $25/year has been extended through the summer. For information about subscriptions, call the Johns Hopkins University Press at (410) 516-6945 or (800) 548-1784.

It's Not Too Late!

If you discovered ***Imagine*** only recently, you missed these focus topics during the past year: *Entering Academic Competitions, Planning Ahead for College, Choosing Academic Summer Programs,* and *Getting the Best Precollege Education.* You may obtain copies of back issues for $5 each by calling the JHU Press at (410) 516-6945 or (800) 548-1784.

Imagine...
Opportunities and Resources for Academically Talented Youth

ISSN 1071-605X
Volume 1 • Number 5
May/June 1994

Copyright © 1994 by the Johns Hopkins University Press

All rights reserved. No portion of this journal may be reproduced by any process or technique without the formal consent of The Johns Hopkins University Press.

Published five times a year—September, November, January, March, and May.

Imagine is published by the Johns Hopkins University Press for the Study of Exceptional Talent (SET) at the Johns Hopkins Center for Talented Youth (CTY). This publication is an outgrowth of newsletters and programs that, for more than twenty years, have served highly talented students identified by the Study of Mathematically Precocious Youth (SMPY) and by SET.

SET Director • Linda E. Brody, Ed.D.
Research Associate • Carol C. Blackburn, Ph.D.
Staff Writer/Editor • Susan B. Hellerman
Staff Writer • Lesley Mackay
Contributing Writers • Amanda J. Claybaugh and Melinda S. Sabol
Administrative Assistant • Patricia A. Wade
Designer, JHU Press • Lesli M. Lai

Annual subscription: $30.00

Address subscription inquiries to:
Journals Publishing Division
The Johns Hopkins University Press
2715 North Charles Street
Baltimore, Maryland 21218-4319
Phone: (410) 516-6945 • FAX: (410) 516-6968
Toll-free: 1-800-548-1784

Address editorial correspondence to:
Susan B. Hellerman
SET at CTY
The Johns Hopkins University
Baltimore, Maryland 21218
Phone: (410) 516-0309 • FAX: (410) 516-0804

How to Think about Your Career When You Haven't Even Decided Where to Go to College

Your Guide to Occupational Map-making

From childhood until the last years of life, human beings imagine and plan for the future. You may have early memories of dressing up as a pirate, bandaging siblings' make-believe wounds, or pretending to be a teacher. This playful testing was not just an important imaginative activity—it was a preliminary step on the road towards your career.

Although it's good for you to continue to visualize and prepare for your working world destinations, career planning is a balancing act, especially in the early stages. Your vision, your drive, your developing sense of where you are going, all need to be moderated with flexibility and perspective. An important part of that perspective is remembering that you have lots of time. Before college, occupational map-making is a hobby, not a vocation, and is nothing to worry about.

Early Career Choice and the Hazards of Deciding Too Soon

Perhaps you are thinking that you already know what you are going to do with your life. You don't want to make new maps; the map you have now—you may have designed it years ago—is all you need to guide you towards your ideal career.

Students who maintain an extremely focused career interest from a very early age are sometimes known as *early emergers*.[1] If you are an early emerger, you may already have a career goal to which you are seriously committed.

Your early career choice may have resulted naturally from your intense interests and unusual abilities. Students with exceptional talents are likely to focus on a specific area of study and, relatedly, to zero in on a specific career. It comes as no surprise when an avid math student envisions herself working as a statistician or when a student who enjoys learning languages imagines himself as a future linguist, translator, or teacher.

You should pay attention to these kinds of developing career interests, asking for the support of your parents, teachers, and counselors in finding ways to explore them. On the other hand, be aware that it is possible to make career choices too soon. "The future" is a dynamic state: it changes along with the person who imagines it. While it is important to respect your interests, it is just as valuable to consider how different your outlook may be in a few short years. You may feel overwhelmingly sure that you want to be an archaeologist or a violinist, but try to keep in mind the full spectrum of your career possibilities.

One way to maintain a balance of interests and competencies is to pursue a broad background *and* explore a primary interest. There is no need to make unnecessary sacrifices—to substitute a less interesting alternative for a long-awaited advanced chemistry course. But while seeking to be true to yourself and your main interests, don't place unnecessary limits on the range of your development.

After all, in today's interdisciplinary environment, areas of concentration are increasingly linked. Historians read physics, and physicists read poetry, to illuminate their own fields and the links among fields. So, don't overspecialize; as novelist E. M. Forster urged in *Howards End*, "Only connect." As you seek connections among seemingly distinct trains of thought, you will open yourself to deeper levels of understanding. And at the same time, you will keep your options open.

Multipotentiality and Career Indecision

Many students do not make early career choices, but instead wrestle with career indecision. Some who are not early emergers not only are undecided about which career option to take, they have *no idea* what they will do.

If you are such a student, you already know that the wide variety of your interests and strengths just adds to the confusion. You are both blessed and burdened with what is sometimes called *multipotentiality*. Able to do many things very well, you can't easily eliminate choices from your career menu. With your complex potential, you need special strategies for tackling your outsized career maze.

If you are coping with this kind of career confusion, you may sometimes feel that your dilemma is unappreciated by others. To those with a different outlook, multipotentiality may seem like a non-problem—comparable, say, to having money in more than one bank account. What does a math whiz-poet-actress have to complain about?

Educators and psychologists believe that multipotentiality *can* cause problems in the career development of talented students.[2] Students who shine in school, where diversity of interest and ability is often applauded and accommodated, will not necessarily find it easy to concentrate their interests and commit to a career. They may neither want nor know how to streamline their focus.

[1] B. C. Marshall, "Career Decision-Making Pattern of Gifted and Talented Adolescents," *Journal of Career Education*, 7 (1981): 305-310.

[2] B. A. Kerr, *Counseling Gifted Students* (Indiana State Department of Education, Indianapolis, 1989).

BEST COPY AVAILABLE

Responding to Multipotentiality: Reducing the Pressure of Career Development

One way multitalented students may deal with career confusion is through recognizing that developing a career—or over a lifetime, two or three careers—does not require abandoning other interests. Although you will have to streamline your focus to define current career goals, you do not have to abandon enthusiasms or neglect skills that are important to you.

As one happily employed recent college graduate put it, "Perhaps, in place of career, we should emphasize the concept of *life work*." Thinking in terms of life work encourages you to see that you can meet important goals in many aspects of your experience, not just in your career endeavors. Your life is bigger than your career, and if you are resourceful, you will find ways to keep your interests alive.

What changes as you move from academic life into more career-focused arenas is that you're likely to experience less freedom in deciding when and how much to devote yourself to your many interests. If you choose a career in laboratory research, you will not be able to design software or play the piano during the working day. But you can still find ways to grow in those areas outside work. (Celebrated poet Wallace Stevens worked his entire life in the insurance business.) The key will be creating and maintaining a schedule for your life that makes room for your diverse interests.

Moving Ahead Realistically

Fitting your interests into your life, not just into your primary occupation, involves recognizing that your career may not always perfectly match your interests. Seeing your workday life as only one arena in which you can work towards meaningful goals reduces unrealistic pressure to find the *perfect* job. This pragmatic view is especially helpful in the early stages of your working life, as you meet the requirements of apprenticeship and work your way up in the field you select.

Again, balance is the key. While visions of the perfect job may actually hold you back in your career development, you have good reason to be optimistic. Qualities such as patience, dedication, and belief in yourself can greatly enhance your career exploration. With energy and creativity, you may well discover a career that incorporates the interests and skills most important to you.

If you do not find your perfect career out there in the working world, make one up! Creating your own job allows you to make room for greater self-expression and to downplay some negative factors you may encounter in existing jobs. The world of computer technology, for example, offers an abundance of examples of motivated young people who created their own positions—and the economic market to sustain them.

How Parents and Educators Can Help Students Sort Out Their Career Options

Career counselors believe that parent education is an important component in guiding students towards optimal careers. Parents not only are highly influential role models, but also are in a position to contribute a great deal to their child's career planning. In fact, *parent* orientation—through programs and discussions facilitated by schools and talent searches—may be the most effective component of career preparation for young students.

The optimal environment for a child's career discovery is one of encouragement, practical assistance, and balanced perspective. Parents need to be sensitive to their influence on their children's sense of the future; career goals should never be imposed on children by adults.

In order to provide appropriate nurturing for students' own early career interests, parents and educators need to be alert to unusually strong abilities or enthusiasms. When possible, students should be provided with relevant training and resources. Parents and educators can be extremely helpful in assisting students who want to secure mentorships, internships, or other kinds of exposure to fields that interest them.

When students are perplexed by multiple career possibilities, parents and educators can provide reassurance and guidance. Students should be counseled that there is no need to select a career before college. At the same time, parents and educators can provide practical assistance—reading material, exposure to different kinds of working environments, and programs in career exploration—as well as emotional support to young people who seem ready to grapple with their future directions. ■

Creativity is an important aspect of career development. Even if you don't plan to create a career, you can use your imagination to go beyond the career possibilities most obvious for you and to explore a broader range of choices. If you love and excel in math, you have analytical skills that would be valuable not only in the fields of teaching, research, and statistics, but also in law, economics, and many other areas. If you are a good writer, you don't need to be a teacher, editor, or journalist to make good use of your skills.

The Role of Values in Career Development

If reviewing your interests and skills does not provide you with enough of a sense of where your career path is headed, you may want to consider letting your beliefs and values help light the way. Both early emergers and the undecided can benefit from running their career possibilities through the test of their beliefs.

Ask yourself questions such as these: "What values do I seek to uphold in my working life?" "What can I offer other people?" "What kinds of work seem most valuable to me?" Your responses may help you clarify what significance different kinds of work hold for you.

If you love math and languages, and can't make up your mind whether you most want to be a math professor, a statistician, a French professor, or a writer, take a look at how well each profession reflects your personal outlook. Perhaps teaching appeals to your fundamental desire to help young people; perhaps you value communication above all else; or perhaps you have a strong belief in a free market economy. Along with your interests and skills, these kinds of values can provide helpful, and even essential, career guidance.

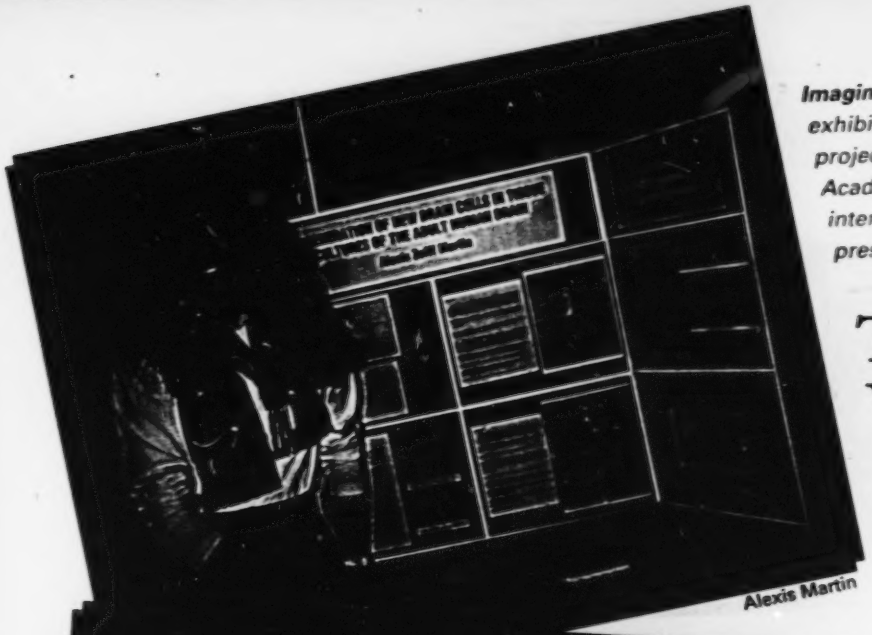
Of course, holding your career interests up to the light of your beliefs is a demanding process. But it may well be worth the effort, if the result is a career chosen in genuine accord with your values.

As you sort through these complex issues, remember that you have lots of time. Not only are you many years from having to make decisive career choices, you are also likely to have many chances to modify and change your early choices. Most adults today have more than one career. If you don't meet your career goals the first time around, you'll be in a better position to make a more informed choice the second time around. ■

BEST COPY AVAILABLE

Imagine staff members attended this year's public exhibition of Westinghouse Science Talent Search projects—held March 12 and 13 at the National Academy of Sciences in Washington, DC—and interviewed some of the finalists who were presenting their projects.

The 1994 Westinghouse Science Talent Search



Alexis Martin

Darius D. Hollings

"An Investigation of Trees in Lattices," "A New Early Irvingtonian Vertebrate Fauna from Furnas County, Nebraska," "Effect of Winglets on Drag of Aircraft Wings." Sound intriguing? These are only three of the topics explored in this year's top forty Westinghouse science projects.

The Westinghouse Science Talent Search, administered by Science Service in partnership with the Westinghouse Corporation, was first held in 1942. Since then, members of its annual crop of forty finalists have gone on to forge some of the most creative and illustrious careers in modern science. Former finalists have won five Nobel Prizes, two Fields Medals in mathematics, and nine MacArthur Fellowships.

Cutting-Edge Science Projects

Whether selected as finalists or not, the 1,645 high school students who submitted independent projects in this year's Science Talent Search gained first-hand experience in scientific research. In fact, many launched themselves into sophisticated experimentation they might not otherwise have embarked on until they found themselves in graduate school several years later.

The caliber of the Science Talent Search projects can be so high that contestants are sometimes working on the cutting edge of science. With the valuable guidance of mentors, students can find themselves exploring questions to which no one knows the answers. **Alexis Martin,** a finalist from La Guardia High School of Music and Art in New York City, based her work on her mentors' research, which had identified precursor cells capable of generating new neurons in the brains of adult songbirds. Alexis participated in a successful search for similar cells in the brain tissue of rats and humans.

While Alexis jumped onto a larger project that was already conceptualized and underway, other contestants designed their own experiments, which were marked by personal interests and concerns. This year, several projects focused on the environment:

Catherine Huang, a finalist from Tower Hill School, Delaware, did not intend to enter the Science Talent Search when she started to investigate the use of ultrasound as an agent in the detoxification of waste water; her motivation came from her dedication to environmental causes. Securing mentors and laboratory access at nearby universities, Catherine eventually demonstrated that sonochemical oxidation has the potential to serve as an effective process for detoxifying hazardous chemicals.

Janos Zahajszky, of Canton High School in Canton, Massachusetts, was awarded seventh place for another project grounded in concerns about water and aquatic ecosystems. When the Exxon *Valdez* dumped much of its oil cargo near the shores of Alaska, Janos was in the eighth grade and was already studying the physical properties of oil and water. The disaster both disturbed him and captured his imagination; by the ninth grade, he was studying oil spills. Janos analyzed brine shrimp to show that the dispersants currently used to treat oil spills make the oil more toxic to marine microorganisms.

Other projects reflected future directions in industrial technology: **Darius D. Hollings,** of Cass Technical High School, Detroit, investigated a new family of ceramics that might eventually be used in automobile engines. Although he is off to study medicine and chemistry at Morehouse College in the fall, he hopes to continue lab work synthesizing ceramics in the summers. Darius became interested in science when, as a young boy, he competed with his grandmother to see who could produce the biggest vegetables in their garden. When Darius pumped growth hormone into the soil on his patch, botany and

BEST COPY AVAILABLE

chemistry came together, and he was hooked on scientific experimentation.

Like Darius, most of the Science Talent Search finalists profess a broad and passionate love of scientific inquiry, and all we talked to plan careers in science. Nevertheless, many spoke of diverse interests and academic pursuits. Alexis Martin, for example, is a flute, piccolo, and voice major at a magnet high school for the arts. Alexis had to study AP Biology on her own because it was not available in her high school's science program. She then sought out the professional relationships and access to laboratories necessary to pursue an independent project. The initiative and resolve Alexis showed in securing the preparation and opportunities she needed are also qualities that were essential in her successful experimentation.

Westinghouse Competition's Positive Influence

The Westinghouse Science Talent Search addresses what many see as a grave inadequacy in most science programs in secondary schools today: an abstract, textbook approach to scientific learning. This annual competition not only motivates ambitious high school students to engage in real-life research, but also inspires a greater interest in and commitment to scientific experimentation in high schools across the United States. The increasing geographic diversity of finalists—who came this year from 31 cities in 21 states—provides encouraging evidence that an important message is being disseminated:

With the right preparation and support, high school students are ready for—and greatly benefit from—adult research opportunities. And whether or not they enter science contests, all students benefit from their schools' increased emphasis on research, where the study of science is brought to life by practical application. ■

For further information on the Westinghouse Science Talent Search, write to Science Service, 1719 N Street, NW, Washington, DC 20036; or call (202) 785-2255.

Profile of a Science Pioneer: Jennifer Kalish

Jennifer Kalish

The 1994 eighth-place Westinghouse winner, Jennifer Kalish, spoke to us at length about the challenges she encountered conducting her project, "A Molecular Genetic Approach to Understanding Aluminum Toxicity in Eukaryotes."

Studying the effect of aluminum on yeast cells, Jennifer found that aluminum inhibits cell growth even in the absence of oxygen. She also generated two types of yeast that are aluminum resistant. Her research may be useful in understanding the development of Parkinson's disease, Lou Gehrig's disease, and Aluminum Bone Disease, in which aluminum is thought to replace some of the calcium in the bone.

Jennifer's project was born of an independent study she designed herself. One day in her school cafeteria, Jennifer opened up a juice box and noticed its aluminum lining. She wondered how much of the aluminum was seeping into the juice and what effect, if any, this had on the human body.

Intrigued by these questions, Jennifer approached and started working at a Johns Hopkins University toxicology lab that was exploring and identifying genes involved in protecting cells against metal toxicity and oxygen toxicity. Having generated several aluminum-resistant strains of yeast, Jennifer found that these strains were not resistant to other heavy metals, indicating that their aluminum resistance had its own characteristics. Still working on isolating and identifying genes that confer aluminum resistance, Jennifer hopes to learn more about the cellular mechanisms involved in aluminum toxicity and resistance to it.

According to Jennifer, the most difficult stage of her project was the three months that she spent looking for a topic to investigate. Her advice to students who want to embark on their own projects? "Talk to anyone and everyone. You never know where the opportunities will come from. . . . In science you have to follow your curiosity. I wasn't extremely interested in this at first, but my curiosity and unanswered questions took over." ■

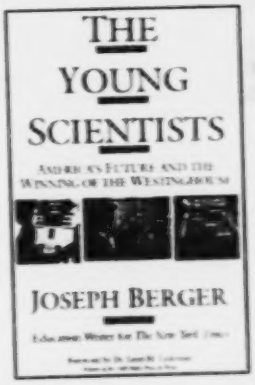
This fall, Jennifer will begin her freshman year at Harvard College.

Westinghouse Scholarship Winners, 1994

A board of leading scientists selects forty finalists from among the hundreds of students who each year submit projects to the Science Talent Search. The forty finalists attend a five-day program in Washington, DC, at which they present their projects to the public and are interviewed by scientists. Thirty of the finalists receive $1,000 scholarships, and ten are selected to receive larger awards.

This year's top ten winners are:

1. **Forrest Anderson,** Helena, Montana, "Pyrolytic/Catalytic Chemical Recycling of Plastic Waste," $40,000 scholarship;
2. **Jennifer Lin,** Flushing, New York, "Cloning and Analysis of a Component, GRB2, in Human IGFR Signal Transduction," $30,000 scholarship;
3. **John Staub,** Sisseton, South Dakota, "Children + Hands-On Learning = Interest," $20,000 scholarship;
4. **Robert Sarvis,** Alexandria, Virginia, "An Investigation of Trees in Lattices," $15,000 scholarship;
5. **Steven Sherman,** Winona, Minnesota, "Effect of Winglets on Drag of Aircraft Wings," $15,000 scholarship;
6. **Flora Tartakovsky,** Queens, New York, "Major Epitope of Gp210 Recognized by Autoantibodies from Patients with Primary Biliary Cirrhosis," $15,000 scholarship;
7. **Janos Zahajszky,** Canton, Massachusetts, "Effect of Dispersant Corexit 9527 on #2 Heating Oil's Toxicity on *Artemia salina*," $10,000 scholarship;
8. **Jennifer Kalish,** Baltimore, Maryland, "Molecular Genetic Approach to Understanding Aluminum Toxicity in Eukaryotes," $10,000 scholarship;
9. **Margaret Bothner,** Falmouth, Massachusetts, "Radon in Falmouth Homes and the Adsorption of its Radioactive Daughters by Secondary Cigarette Smoke," $10,000 scholarship;
10. **Jamel Oeser-Sweat,** New York City, New York, "Loofah Sponges as Reservoirs and Vehicles in the Transmission of Potentially Pathogenic Bacterial Species to the Human Skin," $10,000 scholarship.



For More Insight...

Joseph Berger
The Young Scientists: America's Future and the Winning of the Westinghouse
(Addison-Wesley Publishing Company, 1994)

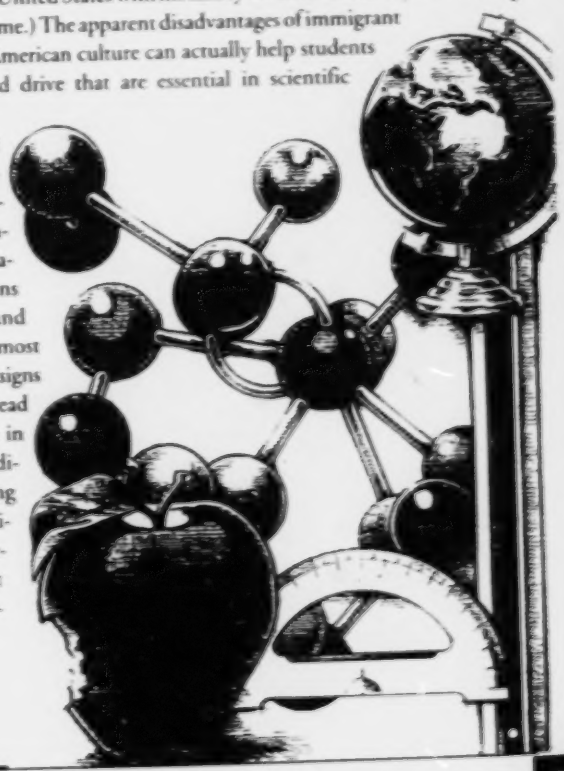
To learn more about the Westinghouse Science Talent Search and its impact on science education, read *The Young Scientists*, by Joseph Berger, Education Writer for *The New York Times*. Berger profiles several Westinghouse competitors and winners, who speak eloquently about their research experience. He also takes a close look at the contestants' families and their schools, as he tries to identify the conditions most likely to generate independent young scientists.

Berger is especially interested in schools—such as Bronx High School of Science—that have outstanding records in producing Westinghouse winners. Why should one high school in a depressed urban area have nurtured such a significant proportion of winners? According to Berger, the answer lies in the school's intense preparation and support of its students and, most importantly, in its fundamental attitude that students can and should participate in creative scientific experimentation.

Science is something you *do*, not something you learn from a textbook: this is the essential message Berger distills from the success stories of the Westinghouse winners and the schools that nurture them. And, he finds, this hands-on approach to scientific learning is gaining momentum around the country as more and more American schools develop science programs with strong research components.

Families are important, too. Berger looks at the role of parents and siblings in the lives of young scientists. Many Westinghouse competitors and winners come from immigrant families relatively new to the United States. (This year's seventh-place winner, Janos Zahajszky, left Hungary for the United States with his family when he was nine years old; Janos spoke no English at that time.) The apparent disadvantages of immigrant status and unfamiliarity with American culture can actually help students develop the independence and drive that are essential in scientific research.

As well as determined and independent, are the Westinghouse winners also extraordinarily talented? Berger concludes, "The surprising revelation from interviews with dozens of Westinghouse winners and some of their parents is that most winners displayed no particular signs of precocity. They learned to read and to do simple arithmetic in school, just as their more ordinary classmates did." According to Berger's research, the condition most necessary for the development of scientific talent is the practice of dedicated independent questioning. ■



MENTORSHIPS and Other Hands-On Strategies for Career Exploration

Although some individuals have no trouble deciding which profession to pursue, selecting a career may seem an overwhelming task to many of you. Clarifying your interests, values, and talents—and trying to match them with your opportunities—can be a daunting prospect. However, if you break down the exploration process by focusing on each of your options in turn, the path may begin to seem less intimidating.

And even if you know exactly where you are heading, there are some experiences you shouldn't miss along the way—experiences that can help you realize your potential and boost your chances of making your career choice a successful one.

What Hands-On Strategies Are Available?

Consider exploring your career interests by becoming involved in the broad range of overlapping activities known as *shadowing, internships, and mentorships.* Each can provide you with valuable experience.

In **shadowing,** you arrange to follow a professional around to get a sense of the everyday activities of that particular career. If you are considering many different career options, shadowing can help you pare down your list. It can also give you the opportunity to observe highly skilled professional work that you may not gain access to during an internship or mentorship.

An **internship** provides a more extended opportunity to observe the inner workings of a professional world. Many organizations offer internships that can give you a taste of the daily activities, attitudes, and lifestyles of the people who work in this field. Some even pay a stipend.

Be aware, however, that the term "internship" covers a wide range of opportunities. At its best, an internship offers first-hand experience in the field you are considering and gives you the chance to talk with insiders about the field, its future, and its training requirements. Sometimes, though, interns may find themselves spending more time on office "go-fer" work.

A relationship in which you are taken under someone's wing represents a more serious commitment on the part of your professional sponsor. While such an association may develop in an internship, it is the very essence of a **mentorship.** In the most rewarding mentor-protégé relationships, the mentor commits to assisting the protégé's development—intellectual growth, widening of horizons, and development of some of the social skills of the profession—while the protégé commits to intellectual exploration and personal self-examination. Academically talented individuals are among those best suited to such an alliance because they tend to be highly motivated and curious learners.

Within this mutual commitment, your mentor can be any or all of the following to you as the protégé:

- *Role-model:* Here is someone who is a few bends in the road ahead of you, who has accomplished something you desire—whether it be the mastery of particular artistic skills, a literary genre, or a scientific technique; the achievement of a degree; or the publication of a personal work.
- *Guide/counselor:* A mentor will almost certainly be able to offer good counsel concerning your educational and career choices. Your mentor's advice can be a great time- and energy-saver as you explore the "how to" of your career development.
- *Catalyst:* Mentors facilitate growth; they nurture and they challenge. Typically, a protégé comes away from the experience with greater maturity, finer leadership skills, and greater self-confidence.
- *Teacher:* The mentoring relationship is an open learning experience, fostering rather than demanding the assimilation of ideas and knowledge. During one-to-one interaction, your mentor can determine the extent to which you are absorbing various skills and information. Your scope of interest and understanding will be enlarged, and your perception of the road ahead will most certainly change.

Why Is Mentorship Important?

Research on the lives of gifted individuals has shown that mentors are among the most important influences on their protégés' choices of fulfilling and successful careers. Mentors have had an important influence on the paths chosen by many prominent historical figures, including scientists, writers, policymakers, and mathematicians.

Furthermore, those who have benefitted from mentor programs tend to demonstrate a greater maturity with respect to career development—a focus on their talents and skills and an awareness of how to further themselves. This is an especially important issue in the education of talented females. Female role-models can help a young woman work through some of the psychosocial pressures she may encounter as she prepares for and pursues her career.

Mentorships are also an important way for the community to fulfill its responsibility to educate the next generation, preparing its members to participate in and contribute to the public welfare. From a purely pragmatic perspective, the community has good reason to ensure that academically talented students have access to the opportunities and the guidance they need to develop their gifts fully and appropriately.

Where Does One Find a Mentor?

Start with your family's network of friends and coworkers. Check out your school's guidance department or resource center for information about existing mentoring programs; many gifted and talented programs have incorporated mentorships into their career education curriculum. Call or visit local businesses, laboratories, galleries, and museums to inquire about existing programs or employees who might be potential mentors.

Some professional societies have educational outreach programs and may help you locate a mentor (see the sidebar on page 9 and the list of organizations following). At a local college or university, you may find graduate students or professors who would be thrilled to draw interested youth to their profession. Seek out retired people; they have a wealth of knowledge and may have more time and flexibility to share it.

If you do start looking for a mentor, schedule a day to shadow a potential mentor and find out whether the two of you will get along, before you make any commitments to each other. The personal chemistry between mentor and protege is critical to ensuring that the experience will be a positive and fruitful one, for both of you.

Although we have devoted more space to mentorships than to shadowing and internships, remember that each of the three offers unique benefits. Someone considering medicine as a career may learn more from a week of shadowing a surgeon than from a year of volunteer work in the local hospital. And someone who wants to observe a field from a more detached vantage point might prefer the relative independence of an internship to the commitment and closeness of a mentor-protege relationship. ■

GETTING THE MOST OUT OF YOUR MENTOR

A mentor can open doors to new worlds for you. By inviting you into her professional world, she offers you an invaluable, first-hand glimpse of life in at least one corner of the real world.

At the heart of the mentoring relationship is your mentor's willingness to share aspects of his working life with you. But you won't be getting the most out of the relationship if you learn *only* about the work that your mentor does. Equally valuable is the opportunity the relationship gives you to talk with someone about his life—about roads taken and not taken, about triumphs, mistakes, disappointments, and what he might do differently if he had the opportunity.

Before you embark on a personal interview, make sure you've chosen a good time—don't launch into deep questions just as your mentor is teaching you how to use a sensitive piece of equipment, for example—and make sure that your mentor is willing to talk about the more personal aspects of her choices and professional experience.

But once you've gotten an okay to talk about personal concerns and are sure that you've chosen a good time to talk, start asking questions! Use this wonderful chance to learn from another's life. And don't be content with simple and vague answers: "What do you like best about your job?" "It's interesting." Follow up: "What especially interests you about it?"

Why did he choose the work he did? What expectations did he have about working in the field? How have those expectations been fulfilled, exceeded, disappointed? Knowing what he knows now, would he make different choices along the way, and why?

Question your mentor about how she feels she has been affected by working within her professional community. How closely did her personality match that of a professional in her field? What aspects of herself has she been encouraged—or forced—to develop? What aspects has she been obliged to downplay or hide?

As you listen, think about yourself, your own desires, strengths, and weaknesses. What aspects of yourself would you most like to accentuate in your work? Keep in mind that, although people generally try to do work that draws upon their strengths, it can also be rewarding to work in an area that allows you to develop less realized aspects of your potential.

As you develop a relationship with your mentor, one of the most important things to remember is that your mentor is there to help you learn about yourself. Your responsibility is to explore, not necessarily to follow in your mentor's footsteps. A good mentor will want to help you find *your* vocation, *not* turn you into a clone of himself. (Indeed, one of the most valuable things you can learn from a mentor may be what you *don't* want to do with your life.)

That doesn't mean that you don't appreciate your mentor and the time and effort she generously gives you. Sometimes it's hard to separate your feelings of gratitude and affection for your mentor from your assessment of how suitable her field would be for you. But you have to try. After all, it's *your* life—ultimately, you are the one who has to be satisfied with your decisions. Your life choices should be optimized to match your interests, abilities, and personality—not those of your parents, teachers, or mentor.

Some Organizations that Offer Internship/Mentorship Opportunities:

■ ■ ■

Academy of Applied Science
98 Washington Street
Concord, NH 03301
Attn: Susan Zehnder
(603) 225-2072

This non-profit organization offers nationwide summer apprenticeship programs in math and science to minority and socially disadvantaged high school students.

■ ■ ■

National Endowment for the Humanities
Younger Scholars Program
Division of Fellowships & Seminars
1100 Pennsylvania Avenue, NW
Washington, DC 20506
Attn: Leon Bramson
(202) 606-8463

A paid internship funded by the NEH requires the student to work full-time for nine weeks on an individual research project. A scholar of the humanities must advise and oversee the project. Both high school and college students are invited to apply. Write or call for guidelines and application forms. The application deadline for the summer of 1995 is November 1.

■ ■ ■

Research Science Institute (RSI)
Center for Excellence in Education
7710 Old Springhouse Road
McLean, VA 22102
Attn: Maite P. Ballestero
(703) 448-9062

This summer program links highly qualified students completing grade 11 with renowned scientists. About 50 students spend six weeks living on the campus of the Massachusetts Institute of Technology (MIT) and working with their mentors on projects involving sophisticated scientific research.

BEST COPY AVAILABLE

Sources of Career Information

One of the goals of professional organizations is to encourage students to enter their fields. Upon request, they will send you information packets that describe particular careers, identify sources of scholarships and fellowships, and define other opportunities in related fields. Note: Many professional organizations offer discounted memberships to students.

Below is a sampling of professional organizations. For more extensive lists, check your local library.

American Institute of Aeronautics and Astronautics
Student Programs
The Aerospace Center
370 L'Enfant Promenade, SW
Washington, DC 20024-2518

American Anthropological Association
1703 New Hampshire Avenue, NW
Washington, DC 20009

Society for American Archaeology
808 17th St., NW; Suite 200
Washington, DC 20006

American Institute of Architects
1735 New York Avenue, NW
Washington, DC 20006

American Association for Artificial Intelligence
445 Burgess Drive
Menlo Park, CA 94025

American Art Therapy Association
1202 Allanson Road
Mundelein, IL 60060

American Astronomical Society
Astronomy Department
University of Texas
Austin, TX 78712-1083

American Institute of Biological Sciences
730 11th Street NW
Washington, DC 20001-4521

Industrial Biotechnology Association
1625 K Street, NW; Suite 1100
Washington, DC 20006-1604

American Chemical Society
Education Division
1155 16th Street, NW
Washington, DC 20036

IEEE Computer Society
1730 Massachusetts Avenue, NW
Washington, DC 20036

American Dental Association
211 East Chicago Avenue
Chicago, IL 60611

The Ecological Society of America
9650 Rockville Pike; Suite 2503
Bethesda, MD 20814

American Economic Association
2014 Broadway; Suite 305
Nashville, TN 37203-2418

National Education Association
1201 16th Street, NW
Washington, DC 20036

National Society of Professional Engineers
1420 King Street
Alexandria, VA 22314

Entomological Society of America
9301 Annapolis Road
Lanham, MD 20706-3115

U.S. Environmental Protection Agency
Office of Public Affairs
401 M Street, SW
Washington, DC 20460

American Academy of Forensic Sciences
218 E Cache La Poudre, PO Box 669
Colorado Springs, CO 80901-0669

American Society of Human Genetics
9650 Rockville Pike
Bethesda, MD 20814

American Geographical Society
156 Fifth Avenue; Suite 600
New York, NY 10010-7002

Geological Society of America
3300 Penrose Place
PO Box 9140
Boulder, CO 80301

American Institute of Graphic Arts
1059 Third Avenue
New York, NY 10021

American Society for Information Science
8720 Georgia Avenue; Suite 501
Silver Spring, MD 20910-3602

Modern Language Association of America
10 Astor Place
New York, NY 10003

Linguistics Society of America
1325 18th Street, NW, Suite 211
Washington, DC 20036

Marine Technology Society
1828 L Street, NW; Suite 906
Washington, DC 20036-5104

Mathematical Association of America
1529 18th Street, NW
Washington, DC 20036

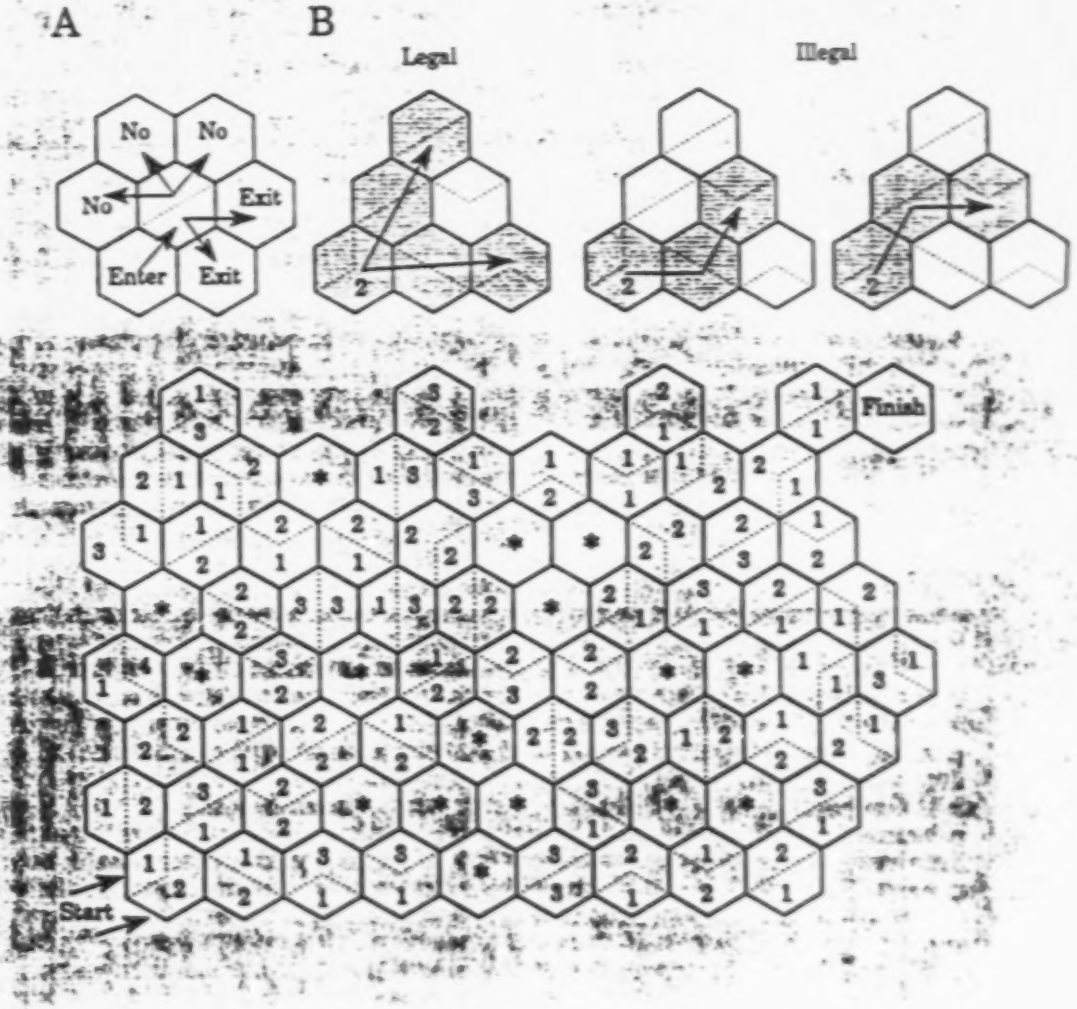
American Medical Association
515 North State Street
Chicago, IL 60610

American Meteorology Society
45 Beacon Street
Boston, MA 02108

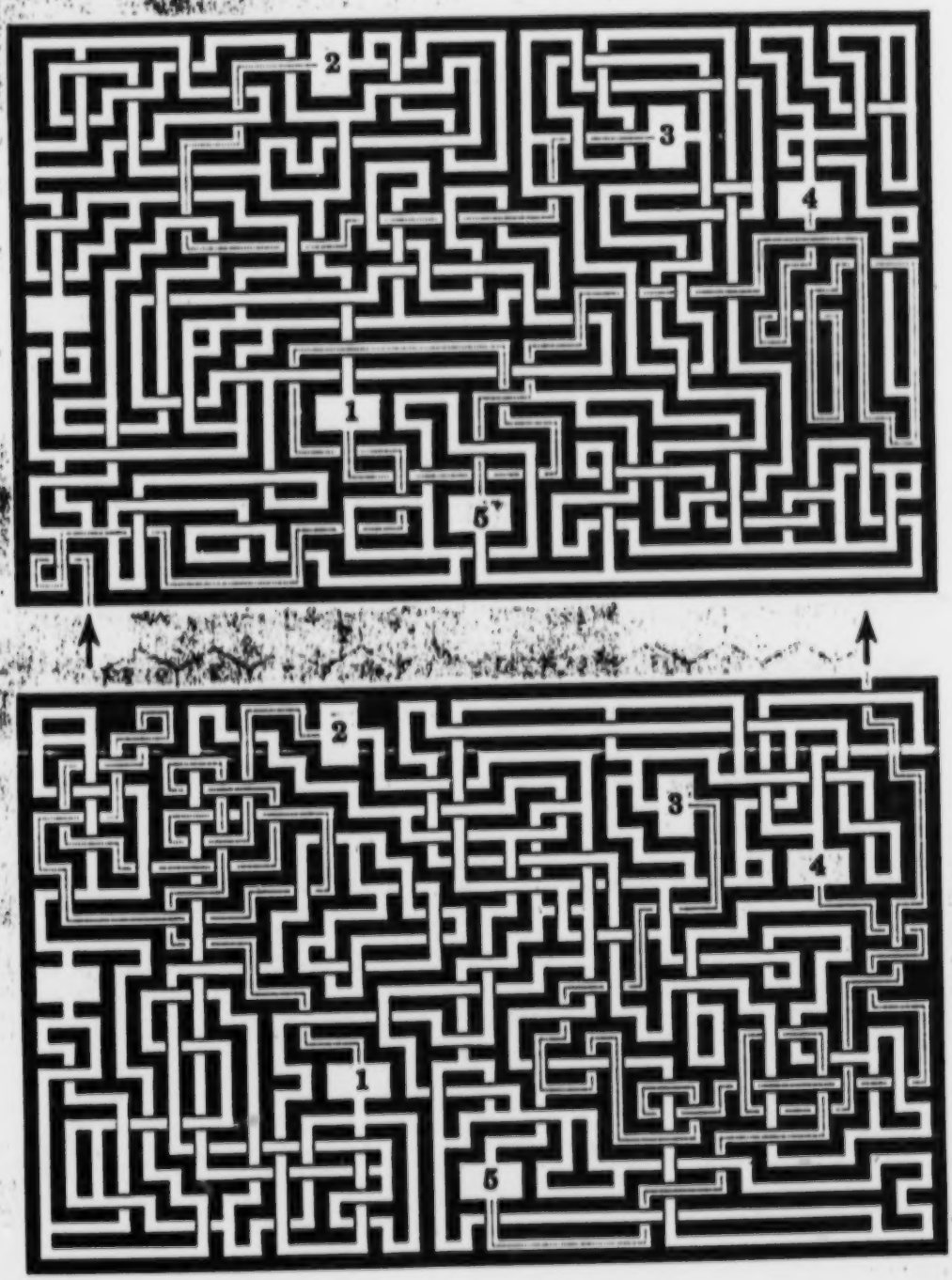
Academy of Motion Picture Arts & Sciences
8949 Wilshire Boulevard
Beverly Hills, CA 90211

American Music Center
Director of Information
30 W. 26th Street; Suite 1001
New York, NY 10010

ERRATUM NOTE: The fine lines on the puzzle (p. 16) and the solution to last issue's puzzle (p. 11) did not reproduce well, so we've enclosed a legible copy of each. Sorry!



BEST COPY AVAILABLE



BEST COPY AVAILABLE

National Association for Music Therapy
8455 Colesville Road; Suite 930
Silver Spring, MD 20910

Society for Neuroscience
11 Dupont Circle; Suite 500
Washington, DC 20036

Newspaper Association of America
The Newspaper Center
11600 Sunrise Valley Drive
Reston, VA 22091

American Ornithologists' Union
Division of Birds
Smithsonian Institution
Washington, DC 20560

American Society of Pharmacology
9650 Rockville Pike
Bethesda, MD 20814

National Press Photographers Association
3200 Croasdaile Drive; #306
Durham, NC 27705

American Institute of Physics
335 East 45th Street
New York, NY 10017-3483

American Political Science Association
1527 New Hampshire Avenue, NW
Washington, DC 20036

American Psychiatric Association
1400 K Street, NW
Washington, DC 20005

American Psychological Association
750 First Street, NE
Washington, DC 20002-4242

Seismological Society of America
El Cerrito Professional Building
Suite 201
El Cerrito, CA 94530

American Sociological Association
1722 N Street, NW
Washington, DC 20036-2981

American Solar Energy Society
2400 Central Avenue, B-1
Boulder, CO 80301

National Clearinghouse for Professions in Special Education
1920 Association Drive
Reston, VA 22091

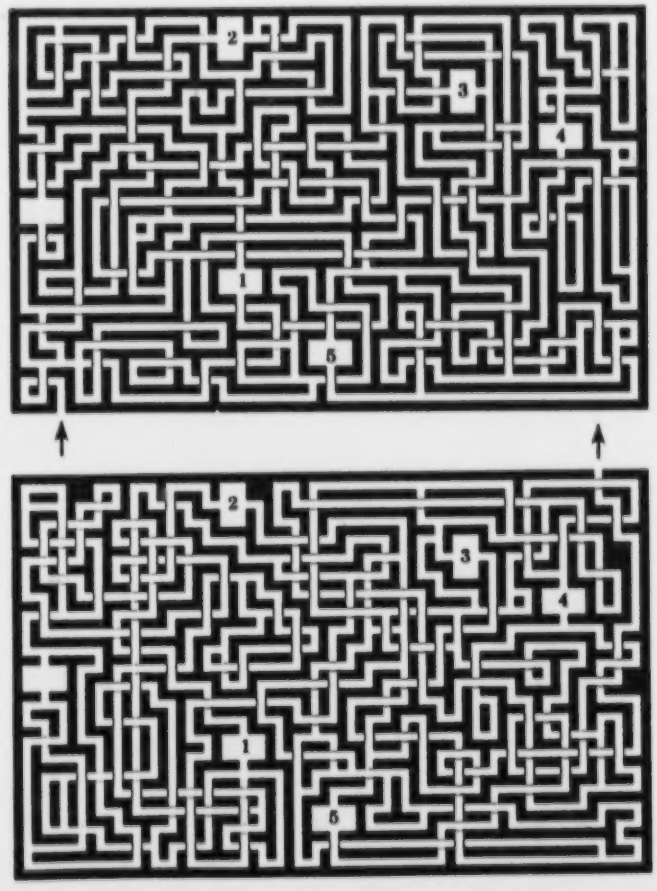
American Speech-Language-Hearing Association
10801 Rockville Pike
Rockville, MD 20852

American Translators Association
109 Croton Avenue
Ossining, NY 10562

American Veterinary Medical Association
1931 No. Meacham Road; Suite 100
Schaumburg, IL 60173

National Writers Club
1450 South Havana; Suite 620
Aurora, CO 80012

The American Society of Zoologists
Box 2739; 104 Sirius Circle
California Lutheran College
Thousand Oaks, CA 91360



Solution to Puzzle in March/April issue of *Imagine*:

The solution path is shown (dotted line); the rooms are numbered in the order in which they are visited. Remember that you jump to the opposite maze every time you come to a room.

If you are highly motivated, intellectually adventurous, and disciplined enough to work on your own, consider

Correspondence Courses & Other Special Study Options

When you run out of advanced courses offered by your school in a particular field and can't find an appropriate substitute locally—or if you're interested in a topic that falls outside most standard curricula—consider the many learning alternatives available to today's inquisitive student.

You can choose from a tempting smorgasbord of academic programs that are advertised as independent or home study, correspondence courses or learning by mail, distance learning, telecourses, and external degree programs.

Before you register for such a course, however, you'll need to take a close—and honest—look at your own study habits and current schedule.

First, Assess Yourself

To be successful at working independently, you must be strongly self-motivated. Even working with a mentor requires a higher level of self-discipline on your part than does taking a classroom-based course with a teacher who constantly reminds you of deadlines. The fact that many alternative learning courses are flexibly paced can be either a plus or a minus: you can use that flexibility to your benefit; or you can slack off and lose your momentum, along with your financial investment.

Adequate time is another critical factor. If you're like most students, your schedule is already loaded with academic, extracurricular, and social activities. Realistically, can you find room for yet another—perhaps even more rigorous and demanding—course?

No doubt, you want to try an alternative learning option because you're really intrigued by a particular subject. The strength of your interest may be just the incentive you need to master the challenges to your motivation and your schedule that independent study will involve.

Then, Assess Your Goals

Think about what kind of course you're really looking for:

■ ***One that will earn you academic credit?*** For-credit correspondence courses are offered at every academic level, with the broadest range of options available at the high school and undergraduate levels. Whether you're interested in a single subject or are seeking a full curriculum for home schooling, accredited college/university programs will have just what you want. Some area talent searches also offer a (more limited) selection of correspondence courses.

You'll need to use some discretion when signing up; be sure before you mail your check that the program is all it claims to be. For example, if you choose from courses in *The Independent Study Catalog* or *The Electronic University* (see sidebar), you are assured that the sponsoring institutions have met the standards set by the National University Continuing Education Association (NUCEA).

Of course, if you're hoping for high school credit, you'll also want to clear your choice with your school administration before registering.

■ ***One that will enhance your knowledge of a subject you're unlikely to take in school?*** Non-credit courses for your enrichment and sheer enjoyment are also offered by those organizations, as well as by local continuing education programs, museums, and libraries.

Finally, Examine Your Options

Correspondence courses, as the name suggests, used to depend upon the U.S. Postal Service—and many still do. But in the high-tech '90s, learning options are expanding dramatically as the school comes to the student, electronically.

Some options have been around long enough to be quite familiar to most of us, such as local TV stations' broadcast of courses during the breakfast hour. Within the past few years, we've also seen the increasingly widespread use of VCRs, fax machines, and even computer e-mail—enabling ready transmission of course lessons and homework between teacher and student.

Now, on the cutting edge of distance learning, some students can connect with professors and classmates by teleconferencing, gain access to libraries across the country on Gopher and Internet, or even (in limited areas) see, hear, and respond to teachers and other students by interactive video.

Given the speed with which technology is advancing, we may have to wait no more than a few years before these cutting-edge options are widely accessible. Meanwhile, television, computers, and videocassettes have already added new dimensions to the world of correspondence courses. ■

For an overview of enough options to boggle your mind, take a look at *The Independent Study Catalog: A Guide to Over 10,000 Continuing Education Correspondence Courses* (1992, $16.95), published by Peterson's in cooperation with the National University Continuing Education Association (NUCEA).

Another Peterson's/NUCEA collaboration, *The Electronic University: A Guide to Distance Learning Programs* (1993, $15.95) provides a listing of courses, degree programs, and certificates available electronically in the U.S.

Some of the more extensive correspondence offerings are available through the following universities:

Pennsylvania State University, Department of Independent Learning, 128 Mitchell Building, PO Box 3207, University Park, PA 16802-3693; (800) 252-3592 (for PA residents) or (800) 458-3617; fax (814) 865-3290.

Texas Tech University, Independent Study by Correspondence, Division of Continuing Education, Box 42191, Lubbock, TX 79409-2191; (800) MY-COURS; fax (806) 742-2318.

University of California Extension, Independent Study, 2223 Fulton Street, Berkeley, CA 94720; (510) 642-4124; fax (510) 643-8683.

University of Nebraska-Lincoln, Department of Independent Study, 269 Nebraska Center for Continuing Education, 33rd and Holdrege Streets, Lincoln, NE 68583-0900; (402) 472-1926; fax (402) 472-1904.

University of Wisconsin-Extension, Independent Study, 432 North Lake Street, Madison, WI 53706; (800) 442-6460; fax (608) 262-4096.

Duke TIP's Learn on Your Own Program

The Duke University Talent Identification Program (TIP) provides a self-directed curriculum in five subjects for academically able students. First, you arrange to work with a mentor in your own community—perhaps a teacher or another professional with expertise in the subject you want to pursue. Then you and your mentor use materials provided by TIP to explore topics at your own pace. Completed assignments are sent to TIP for grading.

At the rate of one lesson per week, each Duke TIP course may be completed in one academic semester. The cost per course ranges from $50 to $125; this includes college-level texts, supplemental materials, and instructional tapes. Courses to be offered during the 1994-95 school year include English Language: Use and Origin, Reflective Writing, Introductory Latin, Microeconomics, and Precalculus Mathematics (four levels).

For further information, write to Duke University TIP, PO Box 40077, Durham, NC 27706; or call (919) 684-3847.

Sample of a Talent Search Correspondence Course:

CTY's Expository Writing Tutorial-By-Mail

Wilmington

Welcome to Wilmington, the largest city in Delaware and 163rd in the country! If you want to party at sophisticated nightclubs, visit great museums or amusement parks, or shop at elegant stores, this is not the place for you. If you want to spend the day camping, breathing clean air, and appreciating the beautiful countryside, I'm afraid you will be disappointed. But, if you would like to eat at over one hundred different fast food 'restaurants,' visit gunpowder factories turned into 'historic' museums, and live a generally humdrum existence, welcome aboard. . . .

Dear John,

I've been planning to take a trip to celebrate my birthday, and after reading your description of Wilmington, moved Delaware straight to the top of my list. I can't wait to tour that gunpowder museum.

Do I sound too snide? Is my tone all wrong? Tone, as assignment ten pointed out, is crucial to humorous writing. Writing can only be funny if its tone is very consistent, because your readers need to know which lens you're using to view the world you're describing. You can choose any lens you like—whimsical or satiric, bitterly sarcastic or lightly ironic—but you can't change lenses in the middle. If you do, your readers will be confused, not entertained.

John, your tone is wonderfully consistent. You begin by evoking two kinds of desirable places—the vibrant city and the beautiful country—and then you tell us that Wilmington is neither. This tone of comic deflation continues through the rest of your essay. The train station is popular with senators . . . and drug dealers. The Longwood Gardens are beautiful . . . and a few miles across the Pennsylvania border.

Your tone is so consistent, in fact, that it almost masks certain structural problems. Only as I read your essay for the second time did I notice its lack of transitions. Each of your paragraphs is coherent and interesting, but the connections between them are not always clear.

Remember, transitions are not an empty requirement dreamed up by tyrannical English teachers (or EWT instructors). Rather, they are a good way to help your readers understand your meaning. If we can see how you think certain ideas are connected, we can begin to see what you might think they mean. . . .

The only way to become a writer is by writing. Working on this principle, writing students in talent search summer programs spend much of their day writing. They read works by published authors and discuss them; they read drafts by other students and critique them. But more than anything else, they write—exercises and free-writes, essays and revisions.

Nearly everything they write is carefully evaluated by instructors or teaching assistants. Instead of receiving a comment like 'Excellent!' and a good letter grade, students receive lengthy descriptions of what is good about their work and concrete suggestions for how it could be improved.

These kinds of classes may sound exciting to you. But what do you do when the summer is over? And what do you do if travel plans, or soccer practice, or family finances keep you from attending summer programs at all?

The **Expository Writing Tutorial (EWT),** a correspondence course offered by CTY during the school year, may be one answer. The EWT is appropriate for students who have never attended a summer program, as well as for students who want to extend the skills they learned there.

As an EWT student, you'll be matched with an experienced writing instructor, who will read your work closely and then mail it back to you—covered with margin notes and accompanied by a long letter full of suggestions (as in the tutor's letter above). You'll complete fourteen assignments, one every two weeks. The kind of assignments you'll receive will depend on which EWT course you take:

EWT Level One concentrates on personal essays. Students practice the skills of description and narration, and begin working on analysis. These are some typical assignments: describe yourself through the eyes of a grandparent; tell the story of a crime you've committed; write a humorous guide to your hometown; compare an illusion with the discovered reality.

EWT Level Two focuses on critical and analytical writing, teaching students how to write effectively for various audiences. Students may receive assignments such as these: write a letter disagreeing with an editorial in your local paper; discuss the importance of a current event for your generation; analyze the symbolism in a short story; interview an interesting person.

EWT Level Three gives students practice in writing short stories. They learn to use characterization and dialogue, narration and conflict. Before bringing these skills together into actual short stories, students might practice them in exercises like these: write a dialogue in which two characters share a secret that is never revealed; describe a scene through the eyes of a man who has just fallen in love, without mentioning that fact; describe that same scene through the eyes of a man whose son has just died in the war.

No matter which level course you take, you'll be working on the same kinds of assignments that you would be given in a CTY summer program. Still, there are crucial differences between a correspondence course and a writing class, and it's important to consider them carefully before you decide whether the EWT is right for you.

As an EWT student, you may sometimes feel as though you're working alone. You'll hear from your instructor every few weeks, but you won't be able to rely on him or her for daily motivation and guidance. And you won't have classmates to turn to for support. Instead, you'll have to find ways to keep yourself going, week after week.

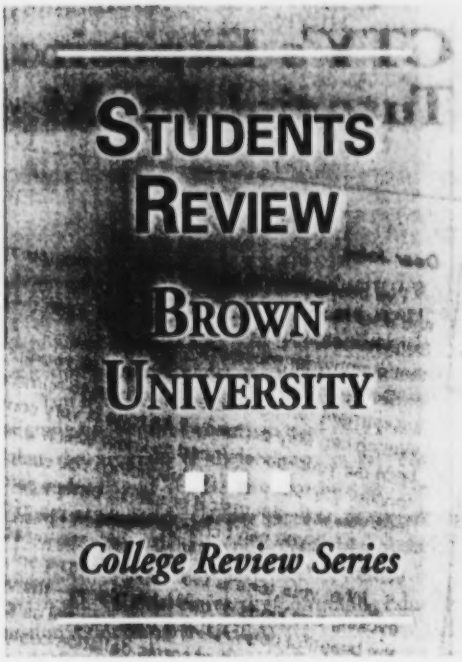
You'll face special demands as an EWT student, but you'll also have special opportunities. Because the tutorial will take place over an entire school year, you'll be able to bring more of your own life to your writing. If you've recently discovered a new author, you can try imitating his or her style; if something upsetting or important has just happened, you can explore that experience in your next essay. And if your muse fails to visit you one night, you can wait until you feel more inspired.

The EWT students who have enjoyed their tutorials the most are often the ones who communicate openly with their instructors. So consider sending personal notes along with your essays. Tell your instructor if you had trouble with a certain assignment, or if you disagreed with his or her comments on your last essay. The more your instructor knows about your experience of writing, the more closely he or she can focus on your particular needs. And that is what EWT instructors are especially able to do—address the specific problems of your writing, while nurturing your individual strengths. ■

For more information about the EWT (for students in grades 8 and above) or the new YWT (for those in grades 6 and 7), write to EWT/CTY or YWT/CTY, The Johns Hopkins University, 3400 North Charles Street, Baltimore, MD 21218; or call (410) 516-0161.

This on-going series is intended to aid prospective college students in their search by offering insiders' views of selected colleges and universities, as expressed by current undergraduates or recent graduates who have exceptionally high academic ability. These students share a general bias in judging undergraduate education: they all have high expectations for a college or university's academic standards, its institutional and instructional flexibility, and its respect for nurturance of emerging talent. In this issue, we focus on Brown University.

Note that the number of student reviewers is small. Consider their personal perspectives as only one component while you gather factual information and impressions from such other sources as college catalogs, site visits, talks with officials and students on campus, and the advice of your guidance counselor and teachers.



Brown University

Our reviewers include nine students who major(ed) in biology (2), geological sciences (1), health & society (1), international relations (1), math (1), neuroscience (1), psychology (1), and Russian studies (1). Students' comments appear within quotation marks.

Quality of Academic Instruction for Undergraduates

Brown has one of the most liberal curriculum policies around: no core curriculum or distribution requirements. While recognizing the dangers inherent in this absence of constraints, our respondents all valued the freedom it gave them to shape their own education. They also spoke glowingly of the level of attention given to undergraduate education at Brown.

"Excellent. Brown's general attitude towards education is quite enlightened: students are expected to design their own education to meet their own goals. There is also a pass/fail option for students who want to challenge themselves in unfamiliar areas without unnecessary concerns about grad school admissions officers. I think my education was a resounding success. I wish I could have had a few more years there."

"The name 'University' is misleading, because in spirit Brown is a liberal arts college. Undergraduate education is the primary focus at Brown, and the quality of instruction is quite good. I have found professors to be universally friendly and accessible."

"The faculty are very committed to teaching. I chose Brown in part because I knew I would be taught by faculty, not TAs. The History and English Departments in particular have really fabulous profs who are successful in their research fields and who are at Brown because they love working with undergraduates."

"Excellent. I had a wonderful experience with my professors, particularly in the Math Department, which is small enough to allow students to get plenty of one-on-one attention. (Avoid the intro level courses, though!) The Computer Science Department was also a wonderful resource for me. There is a tremendous amount of computing power available to any undergraduate who takes one of Brown's ***very rigorous*** *programming courses."*

"One of Brown's unique offerings is its Program in Liberal Medical Education (PLME), an eight-year continuum in which students are accepted to Brown University and the School of Medicine in their senior year of high school. As a PLME student, I've spent the day with an emergency physician and a neonatologist at Brown-affiliated hospitals, attended lectures about medical topics and special issues in medicine such as women in surgery, and been encouraged to view medicine as an art as well as a science. I am a neuroscience concentrator, but PLME students are encouraged to major in whatever subject interests them most, not just science. There are a lot of ambitious premeds out there who live their lives for the MCAT—being in PLME has truly changed my life in terms of how I view my education."

"There are great advisors at Brown, but you have to go to them; they won't come to you. Some of my friends felt lost sophomore year, but they were not used to taking so much responsibility for themselves. I got a lot out of Brown, but I put a lot into it. That's part of the philosophy of the school—that you take responsibility for your education. I see that as a strength of the program, not a weakness. But it's not for everyone—some people do need more structure."

Social Life

Respondents agreed that Brown offers a full social life to its students.

"Freshman year was like being tossed into a living mulch heap: a melting-pot admixture of as diverse a group of students as the admissions office could muster, and an extremely fertile environment for social growth. After that, people did tend to separate into subgroups, some moving into fraternities, coed fraternities, or sororities, or going off-campus. But a few carefully-maintained hangouts such as 'The Underground' provided a common space for people to get together outside their own social connections."

*"**A cappella** singing groups are very popular and perform at various functions. I'm in one, and it's a great experience—a wonderful break from our intense academic schedules. There's nothing like a good jam to improve your mood!"*

"Brown is a great place to be if you have an interest in serving the wider community. There are a lot of well-organized service organizations that work in the Providence community and beyond. The school really promotes these activities."

"If you're looking for city nightlife, Providence is not the place for you. But there's plenty to do on campus—concerts, films, student theatrical production, poetry readings, etc. There were enough on-campus offerings that I didn't really need to venture into Providence."

What Do You Like Best About Brown?

Respondents had already expressed their appreciation for Brown's curricular flexibility; in response to this question, they tended to focus on the atmosphere and their fellow students.

"Most people are extremely motivated and happy to be there. This created an atmosphere I really liked. I like the size, too—small enough that you see people you know, but big enough that there are always new people to meet."

"Working with my classmates and my advisor was a wonderful experience. It was a terrific feeling to be able to go full throttle intellectually with a small group of friends and to hammer out our ideas until the wee hours. My advisor took a personal interest in students who wanted to go farther with the material, and helped them get involved in exciting projects as early as freshman year. The other thing I really loved was meeting a lot of terrific, diverse people who knew how to have a good time."

"I am really happy with the program, with being given responsibility for my education, and with what I did with it. To me, an important part of college was being able to try what I wanted to try, no matter how it turned out. Brown really gave me that opportunity."

What Do You Like Least About Brown?

While Brown's curricular flexibility can be a very positive feature, respondents also noted that freedom can be ill-used or abused. One respondent also commented on urban crime.

"Some students are not ready to take responsibility for themselves. At Brown, you can float through, take really easy classes, and not learn a damn thing. It's your choice—you can waste the many opportunities Brown has to offer."

"Brown is criticized for being unrigorous, and it definitely can be. By giving students the opportunity to design their own educations, Brown sometimes allows those educations to be haphazard and without focus. I was a Resident Advisor, so I got to watch freshmen making their course selections. Because no courses are required, students tend to let their high school experiences determine the decisions they make in college—if someone had a boring physics class in high school, he might refuse to take any science classes in college. You go to college to learn things that you're going to use for the rest of your life—not all undergraduates are mature enough to take that consideration into account."

"Like so many other urban campuses, Brown has problems with urban crime—mostly burglaries, but there have been some assaults. A lot of women especially do not feel safe—you have to be cautious about where and how you go off-campus."

Brown University

Providence, RI 02912
(401) 863-2378

- 4-year private coed university
- Campus in the College Hill section of Providence.
- Semester system.
- Full-time undergraduate enrollment 1993-94: 2,750 men; 2,862 women.
- Special features: For more information about the PLME, call (401) 863-2450. The Rhode Island School of Design (not affiliated with Brown) was referred to by one reviewer as "a happy nearby resource."

Who Would Be Most Compatible with the Academic and Social Atmosphere at Brown?

Respondents again emphasized the maturity required to use (not abuse) Brown's curricular flexibility, and the politically liberal atmosphere.

"Someone who is prepared to think about the education that they want. The advantage of Brown's design-your-own curriculum is that the college doesn't choose what you learn—you choose for yourself what you want to know and carry with you for life. But making good use of that freedom requires maturity."

"Self-motivated. While academic standards at Brown are high, the learning environment is not a pressure cooker. There is little competition between students—most drive is internally generated."

"The student body is liberal, with a small ultra-liberal contingent. Things do sometimes get blown out of proportion, but I would rather be someplace where valid issues are raised than a place where people are afraid or not concerned enough to raise controversial issues."

"Open-minded. Respect for diversity is very important. Bigots, homophobes, and chauvinists are far less welcome here than at many other schools. A student who is ready to take part in events with a diverse population will do well here. In this community, there is a spot for just about everyone who wants to be a part of it."

If You Had It To Do Over Again, Would You Go To Brown?

All respondents said yes.

*"Definitely, with no reservations. The feeling I had about Brown when I applied was only strengthened by my four years there. (And of course, there are a million things I **didn't** take the opportunity to do, that I'd love to go back for. . . .)"*

"Absolutely. I can't think of another place I'd rather be. I grew more there than anywhere else in my life. It's a place that promotes thinking. If I had it to do over, I'd choose Brown again and love it even more the second time. I recommend it to people all the time, but always with the caveat that you have to be sure you want that much responsibility."

"Absolutely yes! Brown is dear to my heart. I like its diversity, friendly atmosphere, academic excellence, school spirit, and the opportunities it affords me. When I commented on Brown's weaker aspects, it was with affection for the core of the university, its reputation, faculty, and position in the academic world. Yay, Bruno!"

As you try to find the college or university best suited to you, the views of Brown presented above may be helpful. Keep in mind that these students might have had similar positive or negative experiences had they attended a different university. At any college, it is important for the individual student to seek out challenging academic experiences and the best professors, and to create a social life that best fits his or her personal style. ■

Note: The students quoted in the College Review Series are expressing their own views, which are not necessarily those of JHU or CTY.

BEST COPY AVAILABLE

CREATIVE MINDS

ImaGiNe...

Submit your creative work—brain teasers, short stories/essays/book reviews. We look forward to hearing from you. Please write to *Imagine* • SET at CTY • The Johns Hopkins University • Baltimore, MD 21218.

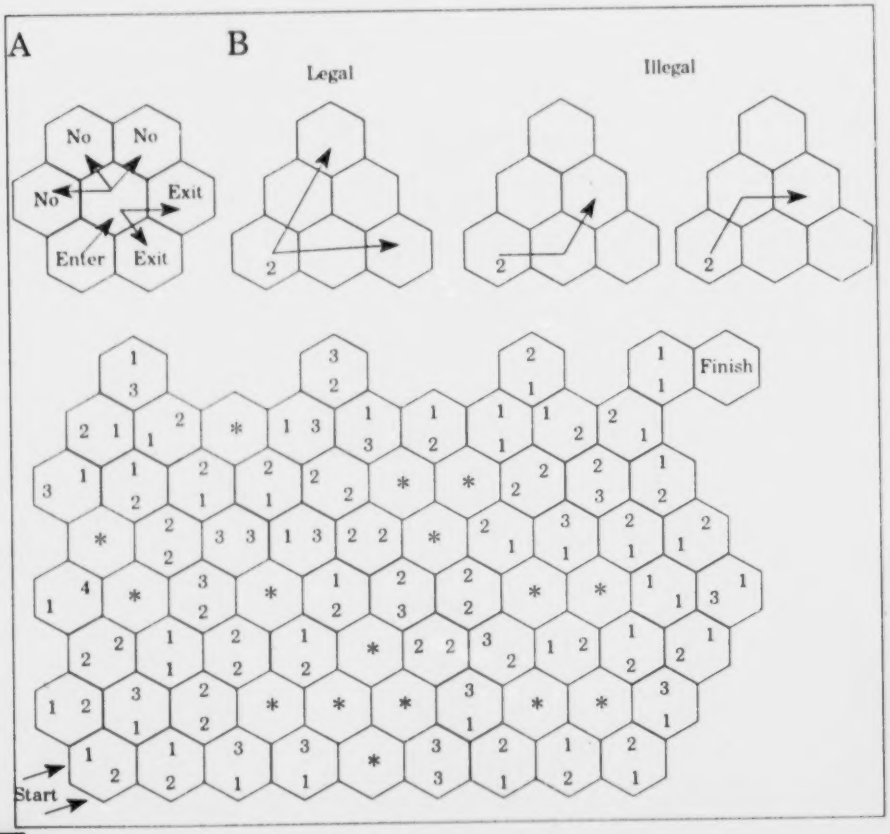
Another Puzzle *by Tim Boester*

Directions:

The objective is to start at Start and finish at Finish. That sounds simple enough! The rules of this puzzle are, however, rather complicated, so we've included some examples to try to clarify the rules.

1) You must exit a hexagon on the same side of the dotted line that you enter (see example A). Thus, depending on the shape of the dotted line in a given hexagon, you will have one, two, or three sides from which you may exit.
2) The number in the hexagon indicates the number of hexagons you must jump in your next move (see example B). (Use the number on the same side of the dotted line as your entry point; ignore the number on the opposite side of the dotted line.)
3) Each move **must** travel a straight line (example B, "Legal" moves)—you cannot make dogleg moves (example B, "Illegal" moves).
4) Ignore the dotted lines in the hexagons that you **jump on**—the dotted lines are relevant only in the hexagons that you **land on** (see example B).
5) You can **jump on** but cannot **land on** asterisked hexagons. All hexagons—including asterisked ones—count in computing jumps.

Start at the indicated hexagon. You may begin on either the 1-or the 2-jump portion of the hexagon.



My Language

By Jake Ng

One day
I will invent a language
with words that whiz
through a school walkway,
tying up a bulky bully
before he snatches a smaller boy
by his collar;

words that snuggle
next to a struggling child
as she tries to add simple numbers
on the blackboard,
throwing the chalk on the ground with disgust,
until the words
whisper the answer
in her ear;

words that hover over a factory,
snatch a plume of smoke by its tail,
and toss it back inside;

words that melt
a saw before it can slice
the giant maple tree;
words that hold
the dead beach tree
and softly hum a funeral song;

"boomerang" words that
quiet the world
and glide back to the owner's feet.

Eighth grader **Jake Ng** has written two novels, numerous poems, and a comic book. A prize-winning pianist, violinist, and composer, he also enjoys playing with numbers and made the honor roll on this year's American High School Mathematics Examination. "My Language," which Jake wrote when in fifth grade, was printed in *Award-Winning Poems*, Vol. XXVIII (1992), by the North Carolina Poetry Society and is reprinted with the author's permission.

Fascinated by mazes and puzzles, **Tim Boester** is also intrigued by roller coaster design. Tim plans to study physics and math when he enters college next fall.